

Reply to Non-Final Office Action of July 24, 2009

### **REMARKS/ARGUMENTS**

In view of the claim amendments above and the remarks and arguments presented below, Applicant believes the pending application is in condition for allowance.

#### **I. Status of the Claims**

Claim 14 is amended in this Response to recite that “one or more reaction vessels have been formed [in the substrate] by affixing a rubber having one or more holes onto a glass.” Support for this element can be found in the clean copy of substitute Specification filed on June 21, 2006, for example, on page 5, lines 33-36, on page 8, lines 22-25, on page 13, lines 6-12, and on page 22, lines 30-34. No new matter is introduced by this claim amendment.

Claims 16 and 18 were previously canceled without prejudice to, disclaimer of, or dedication to the public of the subject matter contained therein.

Upon entry of this Amendment, claims 1-3, 11-15, and 17 are pending and at issue. Claims 4-10 and 19-28 have been withdrawn from consideration.

#### **II. Claim Rejection under 35 U.S.C. § 102(b)**

Claims 1-3, 11, 13-15, and 17 are rejected under 35 U.S.C. § 102(b) as anticipated by United States Patent Application Publication No. US 2002/0192680 A1 by Chan et al. (“Chan”). The Examiner contends that Chan discloses all the elements recited in those claims. Applicant respectfully traverses the rejection.

Independent claim 1 recites the element of “measuring the intensity of an excited fluorescence after applying an excitation light without washing the substrate” (emphasis added). Applicant respectfully submits that Chan does not teach or suggest this element.<sup>1</sup>

The present Specification describes the background behind this element as follows.

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<sup>1</sup> For example, Chan discloses: “. . . . After hybridization, the chip is thoroughly rinsed with double distilled water to rinse away all residual DNA that is not covalently bonded to the porous matrix.” Chan, paragraph [0099], last sentence (emphasis added).

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... However, when examining interactions with a large dissociation constant, i.e. the weak interactions generally seen between sugar chains and proteins that interact with sugar chains, a dissociation reaction proceeds between these sugar chains and proteins upon removal of the probe solution and the washing procedure, making it difficult to obtain accurate data on interactions under conditions of equilibrium. Consequently, this procedure of washing the probe solution presents a significant problem when accurately analyzing data on the interactions between sugar chains and proteins that interact with sugar chains under conditions of equilibrium in a microarray.<sup>2</sup>

...

In the present invention it is unnecessary to wash and remove the probe solution, procedures which were highly problematic when precisely analyzing data on the interactions between lectins and sugar chains under conditions of equilibrium, and it also became possible to detect weak interactions that would be washed away during the washing in conventional methods.<sup>3</sup>

...

The present inventors solved the above problem by using an excitation light to measure the intensity of the excited fluorescence, without washing the probe solution. ...<sup>4</sup>

At least for this reason, Chan does not disclose all the elements recited in claim 1.

Accordingly, Applicant respectfully submits that Chan does not anticipate claim 1. Applicant thus respectfully requests that the rejection of claim 1 be withdrawn.

Claims 2, 3, 11, and 13 depend directly or indirectly from claim 1. Therefore, at least for the same reason as stated above in relation to claim 1, Chan does not disclose all the elements recited in any of claims 2, 3, 11, and 13. Accordingly, Applicant respectfully submits that Chan does not anticipate any of these claims. Applicant thus respectfully requests that the rejection of claims 2, 3, 11, and 13 be withdrawn.

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<sup>2</sup> Clean Copy of Substitute Specification Filed on June 21, 2006, page 2, line 33 through page 3, line 4.

<sup>3</sup> Clean Copy of Substitute Specification Filed on June 21, 2006, page 6, lines 3-7.

<sup>4</sup> Clean Copy of Substitute Specification Filed on June 21, 2006, page 14, lines 23-24.

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Independent claim 14, as amended, recites the element of “one or more reaction vessels hav[ing] been formed [in the substrate] by affixing a rubber having one or more holes onto a glass.” Applicant respectfully submits that Chan does not teach or suggest this element.

This feature of the present invention enables “accurate filling of the areas around lectin spots with a fluorescence-labeled probe solution”<sup>5</sup> as well as “smooth contact with the proteins that interact with sugar chains.”<sup>6</sup> It also enables simultaneous experiments to be carried out on a single substrate.<sup>7</sup> Chan fails to disclose such a feature.

At least for this reason, Chan does not disclose all the elements recited in claim 14. Accordingly, Applicant respectfully submits that Chan does not anticipate claim 14. Applicant thus respectfully requests that the rejection of claim 14 be withdrawn.

Claims 15 and 17 depend from claim 14. Therefore, at least for the same reason as stated above in relation to claim 14, Chan does not disclose all the elements recited in either of claims 15 and 17. Accordingly, Applicant respectfully submits that Chan does not anticipate either of these claims. Applicant thus respectfully requests that the rejection of claims 15 and 17 be withdrawn.

### **III. Claim Rejection under 35 U.S.C. § 103(a)**

Claim 12 is rejected under 35 U.S.C. § 103(a) as unpatentable over Chan in view of United States Patent Application Publication No. US 2004/0248144 A1 by Mir (“Mir”). The Examiner contends that Chan in combination with Mir renders claim 12 obvious. Applicant respectfully traverses the rejection.

Claim 12, due to its dependency from claim 1, recites the element of “measuring the intensity of an excited fluorescence after applying an excitation light without washing the substrate” (emphasis

<sup>5</sup> Clean Copy of Substitute Specification Filed on June 21, 2006, page 5, lines 33-36.

<sup>6</sup> Clean Copy of Substitute Specification Filed on June 21, 2006, page 13, lines 14-15.

<sup>7</sup> See, for example, Figures 10 and 11 of the present Specification and page 30, lines 5-10, of the clean copy of substitute Specification filed on June 21, 2006 (“In addition, in this experiment lectins and antibodies were spotted on the same array, enabling information on the core protein portion and the modified sugar chain portion of glycoproteins to be obtained on a single slide, simultaneously and in parallel. Performing simultaneous and parallel analyses on a single slide brings about the advantage of enabling observations under uniform experimental conditions (such as temperature and reaction time) for each vessel.”).

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added). As stated above, Chan does not disclose this element. Applicant respectfully submits that Mir also does not teach or suggest this element.<sup>8</sup> Further, Applicant respectfully submits that this element would not have been taught or suggested by the understanding of one of ordinary skill in the art at the time of the present invention.

At least for this reason, Chan in combination with Mir does not render claim 12 obvious. Accordingly, Applicant respectfully submits that claim 12 is patentable over Chan in view of Mir. Applicant thus respectfully requests that the rejection of claim 12 be withdrawn.

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<sup>8</sup> For example, Mir discloses: "... The Solution was then brought up to 1 millilitre in 4xSSC 0.2% Sarkosyl. 250 ul of this was added to the Amersham Slide Processor (ASP) machine for a 12 hour hybridization protocol (see ASP protocol B). The cycle included a series of stringency washes, isopropanol flow and air drying. ..." Mir, paragraph [0555], lines 21-26 (emphasis added).

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**CONCLUSION**

In view of the foregoing, it is believed that claims 1-3, 11-15, and 17 are in immediate condition for allowance, and it is respectfully requested that the application be reconsidered and that all pending claims be allowed and the case passed to issue.

If there are any other issues remaining which the Examiner believes could be resolved through a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

Dated: October 26, 2009

Respectfully submitted,

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